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## AGAVACEAE FAMILY

Rhizomatous perennial plants; leaves rigid, fleshy, mostly with spiny edges, and spine-tipped, arranged in a basal rosette; perianth more or less funnel-form, with a short tube, the 6 segments narrow and nearly equal ; stamens inserted at the throat or in the tube; anthers versatile; fruit a loculicidal capsule.

***Agave utahensis*** - Century plant

### Description:

Leaves with spiny margins, plants native to southern Utah; leaves 12-20 cm long, 20 to 25 mm wide, margin more or less wavy, with deltoid teeth about 2 mm long, terminal spine 20-35 mm long; flower stalk 1.5 - 2.5 m tall; flowers in clusters of 2, 4 or rarely 6, yellow.

### Uses:

Edible Parts: Leaves; Root; Sap; Seed; Stem. The heart of the plant can be eaten when baked and is sweet, delicious and rather fibrous. The seeds can be made into flour. Sap from the flowering stem can be used as a syrup and the plant can be tapped with the resulting liquid being fermented into 'Mescal', potent alcoholic drink.

Medicinal Uses: It can be used as an antiseptic, diuretic, and laxative.

Other uses: Brush; Fiber; Needles; Paper; Pins; Soap; Thatching.

***Yucca brevifolia*** Joshua Tree

### Description:

Leaves lacking free marginal fibers; caulescent 2-10 m tall; restricted to southwestern Utah.

### Uses:

Edible parts; flowers, fruit; roots; seeds; seedpod. The flowers can be parboiled in salt water to remove the bitterness, drained and cooked again, tastes like cauliflower. The sugar rich open flowers can be roasted and eaten as a candy. Fruits can be roasted, formed into cakes and dried for later use. The roots can be eaten raw, boiled or roasted. Some indication is given that the seeds were gathered ground into a flour and mixed with cornmeal or other flours to make bread or cake.

The leaf fiber was used to make ropes, baskets, sandals, clothing and mats. The whole leaf can be woven into mats. The roots provide red or black dye. The saponins when extracted from the roots was used as a soap substitute and is good for hair washing.

## ***Yucca baccata*** - Banana Yucca

### Description:

A dense basal cluster of stout strap-like leaves that are 12-40 inches long and 1-2 inches wide. Short stems are single or clumped together. Fibers along the leaf margins curl. Flowering stalks may barely rise above the leaves; bell-shaped flowers are 1 1/2 - 3 1/2 inches long and white to cream in color. Fruits large and fleshy at maturity.

### Uses:

Edible parts include the flowers, fruit, leaves, seed, and stem. The Pueblos made cordage, mats sandals, baskets, and cloth from the leaf fibers; the flowering stalks, flowers, and fruits; and soap was made from the roots. Baccata (fruited) refers to the large pods.

## ***Yucca schidigera*** - Spanish Bayonet

### Description:

Treelike plants to 15 feet tall with stout, dagger-like leaves in a rosette at the end of the stem and with dense, oval clusters of cream-white flowers. Flowers with 6 widely lanceolate, waxy, petal-like parts 1-2 inches long. Pod is oblong, 2-3 inches long. Leaves rigid, concave on upper side, 1-5 feet long, 1-1/2 inches wide, tapered to a stout point, the margins with curled, whitish fibers

### Uses:

Edible parts include flowering stems, flowers, and fruits. *Yucca schidigera* Extract Powder NP can be used in the formulation of foaming beverages such as root beer, carbonated foamy drinks and low-alcohol or no-alcohol beer. Other uses of this ingredient have been found in the dietary supplement (nutraceutical) industry for formulations that help support healthy joints and movement. Young flowering stems can be chopped and cooked like asparagus or baked like sweet potato. Flowers are delicious raw or cooked and can be dried, crushed and used as a flavoring.

Other uses include the making of brushes, fiber for ropes, blankets and mats. The fibers are strong and can be used to make shoes and sandals. Saponins extracted from the roots can be used to make a soap substitute.

## CACTACEAE FAMILY

### *Opuntia basilaris*

#### Description:

Brilliant magenta-pink flowers on low, rounded clumps of ashy gray-green pads. Flowers with many lanceolate petal-like parts up to about 1 1/2 inches long. Stamens many, the filaments magenta; style white or pink. Pads more or less oval, 2-8" long, usually without large needlelike spines, but with many clusters of hundreds of tiny, reddish brown, barbed bristles. Plants to 20" tall, each branch a chain of 2-5 pads. The pad's have numerous, tiny glochids that stick painfully in the skin.

### *Opuntia chlorotica* - Dollar-Joint Cactus

#### Description:

The 3 to 6 feet-tall dollar-joint cacti are the only treelike prickly pears in Zion National Park. Their short, stout trunks support bushy crowns of pads. The pads are 5 to 8 inches in diameter, and many are almost perfectly circular: "round as a sliver dollar" (or, a pancake - another name for this cactus is "pancake pear"). The abundant yellow spines are unusually large glochids often appear to form golden haloes around the pads, making this one of the most attractive of all prickly pears.

The dollar-joint is the last cactus in the park to bloom in the spring. The flowers are pale yellow, sometimes with streaks of light red on the inside near the base of the petals. Dusky-pink or red fruits appear in the late summer and fall from the plant when they are ripe. The fruits are barrel-shaped, measure about 2 inches long and 1 1/4 inches wide, and are dotted with numerous woolly areoles that bear no spines. The dollar-joint grows on cliffs and steep, rocky slopes between 4,000 and 5,000 feet, and is not abundant anywhere in the Park. Many of the stands are nearly inaccessible. Scattered plants may be found on both sides of lower Zion Canyon, especially near the ledges. A few grow in Oak Creek Canyon and on south-facing slopes in Black's Canyon, west of the garbage dump. Several plants may be seen along the staff trail north of the Visitors Center, and one plant grows beside the abandoned Sand Bench Trail.

## ***Opuntia echinocarpa* - Silver Cholla or Golden Cholla**

### Description:

This species papery sheath spine coverings varies, if white the spines appear silvery from a distance, and plants with yellowish or light brown sheaths appear golden. Plants may be 3 to 6 tall, with a short, stout trunk, supporting a crown of branches. Hybridizes easily and so most plants are hybrids. The joints are tuberculate, 3 to 6 inches long and about 1 inch thick. Areoles usually bear 9 to 13 spines 1/4 to 1 inch long. Flowers are greenish yellow, sometimes the outer petals are tipped with light red. Found growing generally at elevations below 4,000 feet .

## ***Opuntia erinacea* - Grizzly Bear Cactus**

### Description:

Plants between 4 and 12 inches tall and can be about 3 feet wide; the large, flattened pads spatulate - or eggshapped, smooth, and 2-8 inches long. Spines 4-9 per cluster, 1/4 to 4 inches long, white, flattened at the base, and straight or curved slightly downward. Flowers 1 1/2 to 3/12 inches wide, yellow, bronze, pink or violet. Dry fruits tan to brown and spiny. Hybridizes with other Opuntia making its identification difficult.

## ***Opuntia polyacantha* - Central or Plains Prickly Pear Cactus**

### Description:

One of the most widespread cactus. It can be found in Texas, Utah California to Canada. It is a ground hugger with pads 5 inches long and the spines clusters are crowded together. Spines may be short and thick as is the case with the plants in the Southwest which are also very spiny. Some others may bear long hair-like spines. Flowers are yellow, but may be pink. The pads may become wrinkled with the coming of winter, due to a loss of water in the cells of the plant. This increase frost resistance as it concentrates the cell sap, acting as a plant antifreeze.

## ***Opuntia phaeacantha* - Berry Prickly Pear Cactus**

### Description:

Sprawling, rather large prickly pear which may cover 5 to 20 feet across and 2 to 5 feet tall. Pads are large and succulent, up to 15 inches in length and about 8 inches in with and up to 1 inch thick. Spines are light colored or variegated,

pointing mostly downward toward the base of the pad. Glochids are present, but are conspicuous only on the upper rim of the pad. Flowers are bright yellow turning to nearly orange before they close after 1 or 2 days of being open. Flower appear mostly in the spring but may bloom even until August. The fruits are 2 to 4 inches long and when ripe turn dark red or purple, with small, widely spaced, spineless areoles. Fruits tend to stay attached to the pads and become a staple in the diets of many animals. The scat of animals eating the fruits is generally stained dark red.

***Echinocereus triglochidiatus* - Claret Cup Cactus**

Description:

The most wide spread and variable in appearance hedge hog cactus. Often they form large mounds of densely packed stems. This is the only hedge hog that has red flowers and the tips of their petals are rounded while most other are pointed. Fruits are spined (which are easily brushed off when the fruits are ripe), red, juicy and edible. Spines are at first yellow, pink, or sometimes black, turning whitish-gray after the first season. Stems are 2 to 8 inches long and about 2 inches in diameter, with 8-12 ribs.

***Echinocereus engelmannii* - Strawberry Hedge Hog (Purple Torch)**

Description:

Occasionally solitary stemmed, but usually with 2 to 20 stems. Stems are 6 to 8 inches tall and 2 to 3 inches in diameter, with 10 to 13 ribs. Spines are variable in color and length, but the lowest central spine and the radial spines in an areole are usually white. Flowers are funnel-shaped, brilliant magenta in color, close at night and last no more than a couple of days. Fruits are round, bright red, juicy and taste somewhat like strawberries. When the fruits ripen the spines are easily brushed off and native animals make short work of them. Often, are found in association with blackbrush.

***Ferocactus acanthodes* - Firebarrel Cactus**

Description:

Ferocactus are bulky succulent plants, globular or cylindric in shape, with a covering of spines borne on parallel ridges or ribs. True leaves are lacking and photosynthesis takes place in the superficial layers of the stem. The plants from this genus are commonly known as 'Barrel cacti' after their shape, or as 'fish-hook cacti' because of their spines or 'visnagas'. These mostly large, sun-loving desert plants come from the southern parts of the USA and Mexico. There are

about 35 species. Large, bell or funnel-shaped, yellow to violet blooms and small, sticky, yellow berries usually appear near the plant crown in the summer. The plant secretes a sugary solution in the summer and autumn, thought to attract pollinating ants. Wash the sugary solution off of indoor or greenhouse plants to prevent the formation of sooty mold.

Most Ferocacti grow in rocky, well drained soil, usually on slopes. However, this large cactus bears lemon, orange or red blooms when 30 cm (12 inch) in diameter. The plant is tolerant of neglect and eventually becomes columnar in shape. The fine, needle-like spines are 5 cm (2 inch) long. Many of the Ferocactus strains are cold hardy down to -4 C.

It is generally agreed that Ferocactus have evolved from Echinocactus and that Ferocactus transformations into species and varieties have occurred according to some order.

### ***Mammillaria tetrandra* - Fish Hook Cactus**

#### Description:

The plants are usually small, globose to elongated, the stems from 1 cm to 20 cm in diameter and from 1 cm to 40 cm tall, clearly tuberculate, solitary to clumping forming mounds of up to 100 heads. Tubercles can be conical, cylindrical, pyramidal or round. The roots are fibrous, fleshy or tuberous. The flowers are funnel-shaped and range from 7 mm to 40 mm and more in length and in diameter, from white to greenish to yellow, pink and red in color, often with a darker mid-stripe. The fruit is berry-like, club-shaped or elongated, usually red but sometimes white, yellow or green. Some species have the fruit embedded into the plant body. The seeds are black or brown, from 1 to 3 mm in size.

Mammillaria's have extremely variable spination from species to species, and attractive flowers, making them specifically attractive for cactus hobbyist. Mammillaria plants are considered easy in cultivation, though some species are among the hardest of the cacti to grow.